

CLAIMS:

1. An apparatus for transporting one or more optical components between a plurality of optical component processing stages of an assembly system, comprising a carrier transport apparatus adapted to move at least one optical component carrier between at least two optical component processing stages and position the at least one optical component carrier between a plurality of a processing positions with respect to each of the at least two optical component processing stages.
2. The apparatus of claim 1, wherein the carrier transport apparatus further comprises a roller assembly driven by a conveyor drive, wherein the roller assembly is adapted to move and support the at least one optical component carrier.
3. The apparatus of claim 1, wherein the carrier transport apparatus comprises a positioning apparatus adapted to move and support the at least one optical component carrier between a plurality of processing positions with respect to the at least one optical component processing stage.
4. The apparatus of claim 3, wherein the positioning apparatus comprises a pedestal adapted to lift and support the at least one optical component carrier.
5. The apparatus of claim 4, wherein the pedestal is adapted to move the at least one optical component carrier in three dimensions with respect to the at least one optical component processing stage.
6. The apparatus of claim 3, wherein the positioning apparatus comprises an indexing transport apparatus adapted to lift and support the at least one optical component carrier.
7. The apparatus of claim 6, wherein the indexing transport apparatus is adapted to move the at least one optical component carrier in a sequential index motion with respect to the at least one optical component processing stage.
8. The apparatus of claim 6, wherein the indexing transport apparatus

comprises at least one indexing stop adapted to stop and position the at least one optical component carrier in a plurality of indexed processing positions with respect to the at least one optical component processing stage.

9. The apparatus of claim 6, wherein the indexing transport apparatus comprises a carrier support member having a cam apparatus and shaft member adapted to move the carrier support member and the at least one optical component carrier between a component transport position and a component processing position with respect to the at least one optical component processing stage.

10. A system for transporting one or more optical components between a plurality of optical component processing stages, comprising:

a conveyor system adapted to support at least one optical component carrier thereon; and

a positioning system adapted to receive from the conveyor system the at least one optical component carrier, the positioning system being adapted to position the at least one optical component carrier between the conveyor system to a processing position with respect to the one or more of the plurality of optical component processing stages.

11. The system of claim 10, wherein the conveyor system comprises a roller assembly driven by a conveyor drive, wherein the roller assembly is adapted to move and support the at least one optical component carrier.

12. The system of claim 11, wherein the roller assembly comprises a plurality of rollers rotatably mounted to a frame wherein the rollers are aligned along a longitudinal axis about orthogonal to the travel of the at least one optical component carrier.

13. The system of claim 10, wherein the positioning system comprises a pedestal adapted to lift and support the at least one optical component carrier.

14. The system of claim 13, wherein the pedestal is adapted to move the at least

one optical component carrier in three dimensions with respect to the one or more component processing stages.

15. The system of claim 10, wherein the positioning system comprises an indexing transport system adapted to lift and support the at least one optical component carrier.

16. The system of claim 15, wherein the indexing transport system is adapted to move the at least one optical component carrier in a sequential index motion with respect to the one or more of the plurality of optical component processing stages.

17. The system of claim 15, wherein the indexing transport system comprises a carrier support member adapted to support the at least one optical component carrier.

18. The system of claim 17, wherein the carrier support member comprises a cam apparatus and shaft member adapted to lift the carrier support from a transport position to a processing position adjacent the one or more component processing stages.

19. A method for transporting one or more optical components between a plurality of optical component processing stages, comprising:

transporting at least one optical component carrier between at least two optical component processing stages on a conveyor;

receiving the at least one optical component carrier at a positioning apparatus disposed along the conveyor; and

positioning the at least one optical component carrier between the conveyor and a processing position with respect to one or more of the plurality of optical component processing stages with the positioning apparatus.

20. The method of claim 19, wherein transporting on the conveyor further comprises moving the at least one optical component carrier in a transport direction on a plurality of rollers between the at least two optical component processing

stages.

21. The method of claim 19, wherein the receiving step further comprises lifting the at least one optical component carrier from the conveyor.

22. The method of claim 19, wherein positioning the at least one optical component carrier comprises moving the at least one optical component carrier with a pedestal between a plurality of processing positions with respect to the at least two optical component processing stages.

23. The method of claim 19, wherein positioning the at least one optical component carrier comprises sequentially moving the at least one optical component carrier at least one incremental distance between a plurality of processing positions with respect to the at least two optical component processing stages.

24. An optical assembly transport system for transporting one or more optical components stored within at least one optical component carrier traveling along a process path between a plurality of optical component processing stages, comprising:

a frame;

a plurality of rollers rotatably attached to an upper member of the frame, wherein the rollers are spaced and disposed along a longitudinal axis of the optical assembly transport system to support the at least one optical component carrier, and wherein each of the plurality of rollers are disposed about orthogonal to the at least one optical component carrier travel direction along the process path;

a conveyor drive adapted to spin at least one set of the rollers to urge the optical component carrier upstream or downstream along the process path; and

a carrier component positioning apparatus coupled to the frame and adapted to receive and position the optical component carrier for processing adjacent at least one of the plurality of optical component processing stages.

25. The apparatus of claim 24, wherein the conveyor drive comprises at least

one conveyor motor to enable a roller drive system to rotate at least some of the plurality of rollers.

26. The apparatus of claim 24, wherein the carrier positioning apparatus comprises a shaft coupled to a pedestal adapted to support the at least one optical component carrier.

27. The apparatus of claim 26, wherein the pedestal and the shaft extend through an opening of a floor of the frame to engage at least some of a bottom of the at least one optical component carrier.

28. The apparatus of claim 26, wherein the pedestal is adapted to move the at least one optical component carrier in three dimensions with respect to at least one of the plurality of optical component processing stages.

29. The apparatus of claim 24, wherein the carrier positioning apparatus comprises a carrier support member adapted to lift and hold the at least one optical component carrier between at least a component transport position and a component processing position.

30. The apparatus of claim 29, wherein the carrier support member is coupled to a lifting apparatus having a shaft member in sliding engagement with the frame wherein the shaft member includes a rolling end distal a support end that is coupled to the carrier support member.

31. The apparatus of claim 30, wherein the rolling end is in rotatable contact with a cam member disposed on a camshaft, wherein as the camshaft is rotated the carrier support member is raised and lowered between the at least component transport position and the component processing position.

32. The apparatus of claim 24, further comprising a plurality of indexing stop members adapted to intercept the at least one optical component carrier traveling along the process path, and to control the movement of the at least one optical

component carrier along the processing path with respect to the at least one of the plurality of optical component processing stages.

33. The apparatus of claim 32, wherein the plurality of indexing stop members control the optical component carrier movement along the process path to sequentially move the optical component carrier at least one incremental distance amount with respect to the at least one of the plurality of optical component processing stages.